



MODE OF TREATMENT OF INTRA-ABDOMINAL ABSCESSES

Konstantin Kostov

Department of General, Visceral and Emergency Surgery, UMHATEM Pirogov - Sofia, Bulgaria.

SUMMARY

Purpose: The purpose of this study is to analyze the indications and clinical use of percutaneous drainage and its results in the treatment of intra-abdominal abscesses.

Material and Methods: Data on 63 patients with intra-abdominal abscess, was processed within a retrospective clinical analysis for the period of 1.1. 2015 to 1.1. 2017 in the General, Visceral and Emergency Surgery Section of the UMHATEM "Pirogov". Of the hospitalized women are 37 (58.73%), men 26 (41.27%). The age in this retrospective analysis varied from 18 to 76 years (average 43.7 years).

Results: The most common abscesses were hepatic, which were associated with hepatobiliary pathology (inflammatory processes or neoplasia) - include 36 patients (57.14%). The next group (19 patients - 30.16%) were with pelvic abscesses (mostly of gynaecological origin) and those associated with the ileocecal segment (after acute appendicitis or, more rarely, associated with peritumoral infiltrate). Eight of the patients (12.7%) were diagnosed with an abscess in the left iliac fossa, resulting in acute diverticulitis on the colon sigmoideum.

Conclusions: The method of drainage under ultrasound control is successful, with a low morbidity and mortality rates, well tolerated by patients, low cost, performed under local anaesthesia, even for high-risk patients, and should be used as the first step in the algorithm of treatment of an intra-abdominal abscess.

Keywords: intra-abdominal abscess, drainage, ultrasound control, collection, surgery,

INTRODUCTION

Intra-abdominal abscesses are well-known complications and continue to represent a diagnostic and therapeutic challenge for the surgeon. Lo-

calization of these collections may be in the intra-peritoneal, pelvis or retroperitoneal space. They are often a complication of colorectal disease (especially inflammatory), neoplasms or trauma. They may also be complications following digestive tract surgery or less often in lesions of the urinary tract. Intra-abdominal abscesses may be asymptomatic and can be easily missed.

In the past, it has been difficult to determine their localization, as well as to choose an accurate approach to their treatment. Rapid recognition, early localization and adequate drainage are the key factors for successful treatment.

Until 1953, surgery was the only approach to treating these abscesses. In 1954, for the first time, McFadzean successfully drained a liver abscess [1]. But this was a precarious procedure without ultrasound or X-ray control. Hence, surgeons were reluctant to use this blind procedure as a therapeutic modality for treatment of intra-abdominal abscesses.

However, with the invention of Computed Axial Tomography in 1974, the approach changed, and the same year a liver abscess under ultrasound control was drained [2]. This new drainage method offers a number of advantages such as fewer complications, shorter hospitalization, reduced postoperative pain, better cosmetic results, avoidance of general anaesthesia and lower cost compared to surgical treatment.

The **purpose** of this study is to analyze the indications for clinical use of percutaneous drainage and its results in the treatment of intra-abdominal abscesses.

MATERIAL AND METHODS

Data on 63 patients with intra-abdominal abscess, were processed within a retrospective clinical analysis for the period of 1.1. 2015 to 1.1. 2017 in the General, Visceral and Emergency Surgery

Section of the UMHATEM “Pirogov”. The clinical diagnosis was based on history, physical examination, laboratory results, radiography, echography and CT. Fever was recorded in 85% of cases. Of the hospitalized women are 37 (58.73%), men 26 (41.27%). In this study, the parameters - age, gender distribution, clinical symptoms, mode of treatment, morbidity and mortality were analyzed. The age in this retrospective analysis varied from 18 to 76 years (average 43.7 years).

Patients were pre-medicated. Vitals were monitored throughout the procedure. Depending upon the abscess to be drained the patient was given appropriate position. The abscess cavity was located and approach route decided avoiding important structures. A direct, easily accessible and a safe path was chosen. Depth of abscess from skin, appropriate angle of the approach and the exact site of puncture was determined. Local anaesthesia was given so as to raise small wheal and then at the site of puncture a small cut was made on the skin with the scalpel. The patient was asked to hold his breath and the jelco needle along with trocar was passed towards the abscess cavity with predetermined angle up to the predetermined depth. Presence of needle in the abscess cavity was confirmed by a giving way sensation, scanning needle tip echo and the free flow of pus. Trocar was removed, and a syringe was applied. Pus sample was collected in a sterile specimen bottle for microscopy and culture sensitivity and the pus was drained till the cavity collapsed (confirmed by ultrasound) or till no more pus is aspirated.

In this study we have kept an indwelling drainage tube in some patients who had communicating abscesses or irregular cavities where dependent drainage of each abscess individually was not possible or with large collection or with thick / viscous pus content of cavity. Pigtail catheter and supracath were also used in this study wherever deemed necessary. In those cases, where an indwelling catheter (draining tube) was kept, the decision to remove the drain was taken whenever there was no drain for at least 24 hours or when ultrasonography revealed no significant residual collection.

Intravenous fluids, analgesics and systemic antibiotics were given. Patients were observed for signs of peritonitis.

Follow up ultrasound after three days for size of abscess cavity (residual volume) and echogenicity of abscess cavity was performed.

Drainage of the abscess in all patients was

performed with local anaesthesia under ultrasound control.

Patients under 18 years of age were excluded from the study.

The data from all patients admitted with an intra-abdominal abscess were carefully systematized, analyzed and summarized. The results were summarized by tracking the morbidity up to one-month post-discharge.

RESULTS

The main symptoms manifested in patients with intra-abdominal abscesses were fever (57 patients-90.48%), abdominal pain and discomfort (all patients), and in some cases (19 patients - 30.16%) - weight loss (Table 1).

Table 1. Symptoms of intra-abdominal abscesses

Symptoms of intra-abdominal abscesses	(%)
fever	57(90.48%)
abdominal pain and discomfort	63(100%)
weight loss	19(30.16%)

The most common abscesses were hepatic, which were associated with hepatobiliary pathology (inflammatory processes or neoplasia). In the current series, they include 36 patients (57.14%). The next group (19 patients - 30.16%) were pelvic abscesses (mostly of gynaecological origin) and those associated with the ileocecal segment (after acute appendicitis or, more rarely, associated with peritumoral infiltrate). Eight of the patients (12.7%) were diagnosed with abscesses in the left iliac fossa, resulting in acute diverticulitis on the colon sigmoidum (Table 2).

Table 2. Abscess localization

Abscess localization	(%)
hepatic abscess	36 (57.14%)
pelvic abscess	19 (30.16%)
abscess in the left iliac fossa	8 (12.7%)

After identifying the purulent collections and locating them, patients were prepared for a drainage intervention. The abscess was reached by percutaneous abdominal drainage (PTC) under ultrasound control with local anaesthesia. A sample for

microbiological testing was taken, with a view of optimizing the antibiotic therapy. Treatment also included fluids and analgesics. The hospital stays varied from 2 to 7 days (on average, 2.8 days). Drainage was removed after clinical, ultrasound or CT data for the successful eradication of the collection.

Six of the patients (9.52%) underwent surgical intervention due to abscess persistence and one because of a confirmed iatrogenic bowel lesion. The morbidity was 7.94% (5 patients). Four of them were with discreet bleeding (no surgery required), and one was with the above-mentioned intestinal lesion. The mortality was 3.17%. Two patients died of sepsis, not directly related to the procedure.

DISCUSSION

The analysis of the results of the present study shows that the method of drainage of intra-abdominal abscesses by percutaneous abdominal drainage (PTC) is minimally invasive and has many advantages over classical surgical treatment. It is available nowadays in major hospital centres as a first step in the intra-abdominal abscess treatment algorithm. If this procedure is inadequate, the intervention is switched to surgery. The identification of the abscess and its drainage is also based on good knowledge of the topographic anatomy of the abdominal cavity. The most common localization in the study was the liver (36 patients). Successful drainage data reported in the literature are at frequencies of 80-90% of all intra-abdominal and pelvic abscesses, with the exception of splenic whose frequency ranges from 60-77%. The reasons are the multiple-locations and the number of these abscesses [3].

Complications in the preoperative stage were due to an advanced inflammatory or malignancy. Postoperatively, mainly due to insufficient lavage of the abscess cavity or inability to eradicate the root cause for the occurrence of these purulent collections.

Following microbiological testing, the most common isolate strain was *Escherichia coli*, which corresponds to the Aeder study [4].

If a local debridement is needed due to em-

bryonic or postoperative adhesions as well as complicated localization, the procedure is inapplicable. There is no correlation between the size of the abscess and the conditions for easy or difficult drainage. In this series, 90.48% of cases were successfully drained, which corresponds with the data from Akinci D.-91% [5]. These results demonstrate the effectiveness of PTC drainage and why it is considered as a first step in the treatment of intra-abdominal abscesses regardless of their number and size. Morbidity was at low levels-7.94%, corresponding with literature published worldwide. Mortality was 3.17% - two patients died. The cause was prolonged sepsis and was not directly related to the procedure.

Early identification of intra-abdominal abscesses, accurate antibiotic therapy and the appropriate invasive procedure helped to reduce morbidity and mortality rates in their treatment [6, 7].

CONCLUSION

The analysis shows that this method of drainage under ultrasound control is successful, with a low morbidity and mortality rates, well tolerated by patients, low cost, performed under local anaesthesia even for high-risk patients and should be used as first a step in the algorithm of treatment of intra-abdominal abscesses.

Mode of treatment between percutaneous and surgical drainage must be made by discussion with the radiologist and final decision should be made by the surgeon. Hence, the treating surgeon should not hesitate to undertake surgical drainage whenever and wherever indicated [7,8].

Thus, percutaneous aspiration/catheter drainage of intraabdominal abscess under ultrasound guidance is the accurate, safe, economical and effective method and is the treatment of choice in patients who do not have other indication of exploration. It should be considered as an initial valid alternative and may not be a total substitute to surgery.

Acknowledgement

This study did not receive any funding. There is no commercial or propriety interest.

REFERENCES:

1. McFadzean AJ, Chang KP, Wong CC. Solitary pyogenic abscess of the liver treated by closed aspiration and antibiotics; a report of 14 cases with recovery. *Br J Surg*. 1953 Sep; 41(166):141-152. [[PubMed](#)]
2. Smith EH, Bartrum BJ. Jr. Ultrasonically Guided Percutaneous Aspiration of Abscesses. *Am J Roentgenol Radium Ther Nucl Med*. 1974 Oct;122(2):308-12. [[PubMed](#)] [[Crossref](#)]
3. Lucey BC, Boland GW, Maher MM, Hahn PF, Gervais DA, Mueller PR. Percutaneous nonvascular splenic intervention: a 10-year review. *AJR Am J Roentgenol*. 2002 Dec;179(6): 1591-6. [[PubMed](#)] [[Crossref](#)]
4. Aeder MI, Wellman JL, Haaga JR, Hau T. Role of surgical and percutaneous drainage in the treatment of abdominal abscesses. *Arch Surg*. 1983 Mar; 118(3):273-280. [[PubMed](#)]
5. Akinci D, Akhan O, Ozmen MN, Karabulut N, Ozkan O, Cil BE, et al. Percutaneous drainage of 300 intraperitoneal abscesses with long-term follow-up. *Cardiovasc Intervent Radiol*. 2005 Nov - Dec ; 28 (6) : 744 - 50 . [[PubMed](#)] [[Crossref](#)]
6. Horn CB, Coleoglou, Centeno AA, Guerra JJ, Mazuski JE, Bochicchio GV, Turnbull IR. Drain Failure in Intra-Abdominal Abscesses Associated with Appendicitis. *Surg Infect (Larchmt)*. 2018 Apr;19(3):321-325. [[PubMed](#)]
7. Roberts BW. CT-guided Intra-abdominal Abscess Drainage. *Radiol Technol*. 2015 Nov-Dec; 87(2):187CT-203CT. [[PubMed](#)]
8. Coelho A, Sousa C, Marinho AS, Barbosa-Sequeira J, Recaman M, Carvalho F. Post-appendectomy intra-abdominal abscesses: six years' experience in a Pediatric Surgery Department. *Cir Pediatr*. 2017 Jul 20;30(3): 152-155. [[PubMed](#)]

Please cite this article as: Kostov K. Mode of treatment of intra-abdominal abscesses. *J of IMAB*. 2020 Jan-Mar;26(1):2994-2997. DOI: <https://doi.org/10.5272/jimab.2020261.2994>

Received: 09/04/2019; Published online: 23/03/2020



Address for correspondence:

Konstantin Kostov, MD, PhD
Surgical Clinic, UMHATEM "N. I. Pirogov"
21, Totleben Blvd., 1606 Sofia, Bulgaria.
E-mail: dr.k.kostov@gmail.com